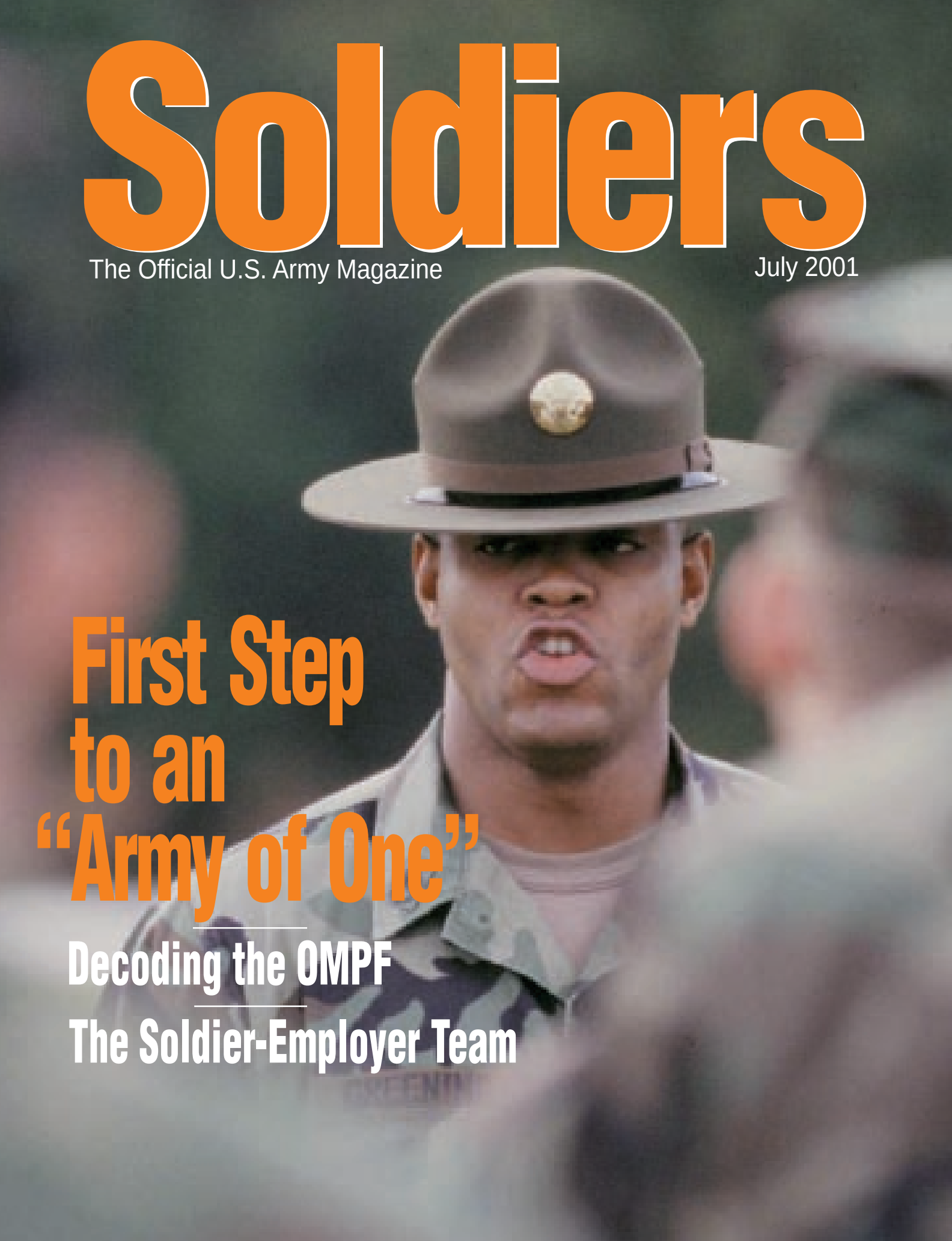
Soldiers

The Official U.S. Army Magazine

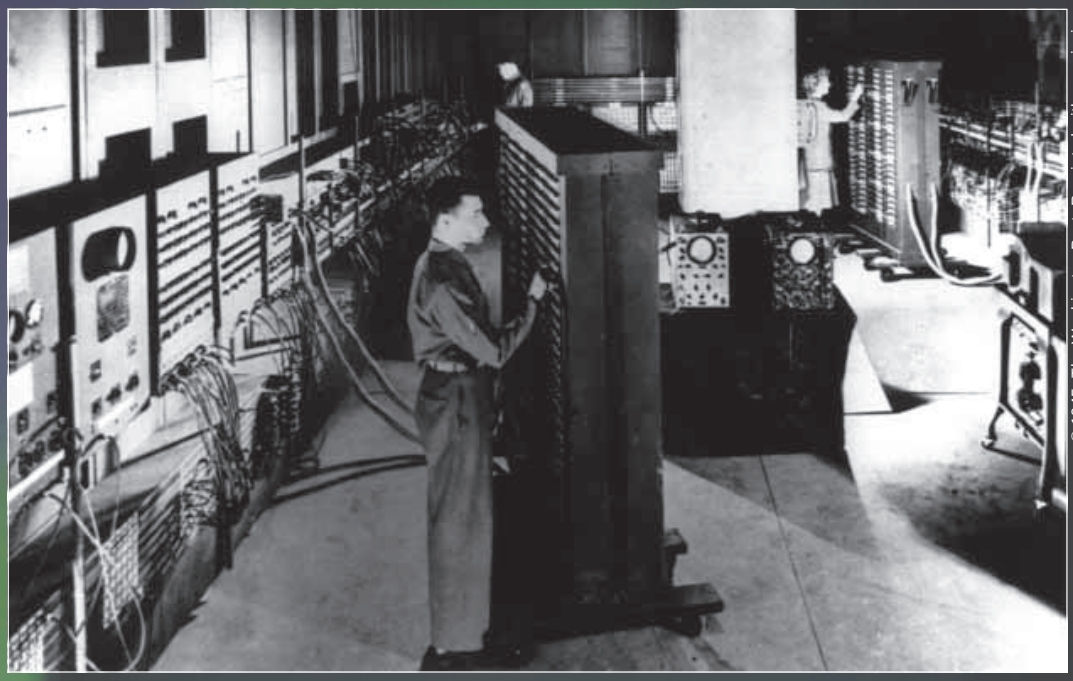
July 2001



First Step to an "Army of One"

Decoding the OMPF

The Soldier-Employer Team



Army Transforming America

Entering the Computer Age

IMAGINE ordering a custom-designed computer to help soldiers calculate artillery trajectories, and on delivery the new device meets the following specifications: *Adds, subtracts, multiplies and divides, extracts square roots and stores up to twenty 10-digit decimal numbers*. Weighing in at about 30 tons, it tends to overheat and consumes an enormous amount of electrical energy.

But in its day, the behemoth described above — the Electronic Numerical Integrator and Calculator — was an engineering marvel. Better known as ENIAC, the world's first electronic digital computer grew from needs identified during the Army's preparations for entry into World War II, when the Ordnance Corps went looking for a highly accurate device to compute a projectile's trajectory and time of flight. It was a task that, when completed using a desk calculator and slide-rule, took 20 hours — far too long for anything but a limited number of stationary targets. Even the unreliable analog differential analyzer, with its electric relays, required 15 minutes to do the job. In contrast, ENIAC did it in 30 seconds, or just half the time of the projectile's flight.

In the early 1940s Ordnance Corps COL Paul N. Gillon tirelessly promoted new technologies that advanced ballistic computations, and during ENIAC's construction conferred frequently with project researchers at the University of Pennsylvania. Not completed until 1947, ENIAC cost about $486,000, but it soon began paying both immediate and long-term dividends to the Army and the nation. In short order, it became the key to opening new avenues for solutions to many perplexing scientific problems. Besides its ballistic computations, ENIAC assisted with weather predictions, atomic-energy computations, cosmic-ray studies, thermal ignition, random-number studies and wind-tunnel design. It pioneered the development of high-speed digital computing and automatic data-processing machinery.

ENIAC's work for the Army helped initiate the widespread commercial adaptation of computers to increase the speed and efficiency of data processing in such areas as personnel management, financial administration and maintenance of medical records. And while its vacuum-tube technology has long since been outpaced by transistors and silicon chips, ENIAC paved the way for the onboard computers and hand-held devices that today keep soldiers competitive on a more violent, uncertain battlefield. — *CPT Patrick Swan*